Listing of the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claim 1 (currently amended): A television rating system for targeted program delivery, comprising:

a server-side system for evaluating television behavioral viewing data from a plurality of users and for categorizing the data into non-demographically classifiable category groups;

a clustering engine included in the server-side system for:

receiving the television behavioral viewing data, processing the television behavioral viewing data;

using a category training set for clustering the television behavioral viewing data into the category groups over a predetermined training period[[,]]; ~~and~~

generating ~~user~~category behavioral profiles targeting the category groups; and

generating advertising category prototypes by removing television behavioral viewing data parameters most common between the category behavioral profiles;

a client-side system coupled to the server-side system and adapted to classify a television user into at least one of the category groups based on advertising category prototypes received from the clustering engine;

a contextual behavioral profiling agent included in the client-side system for deriving profiling information related to a television user's viewing behavior with content and usage-related preferences; and

a behavioral model database for storing in the client-side system the profiling information derived by the profiling agent.

Claim 2 (previously presented): The television rating system according to claim 1, wherein said clustering engine is a software agent residing in a central computer system at a television distribution head-end in the server side system and is programmed to create template behavioral profiles each corresponding to an associated one of the targeted category groups.

Claim 3 (previously presented): The television rating system according to claim 2, wherein said clustering engine is trained substantially exclusively on tagged viewing data from a given target group to learn a most general profile of the given target group.

Claim 4 (previously presented): The television rating system according to claim 2, wherein said clustering engine is programmed to generalize user profiles in a targeted category group into an aggregation representative of all dimensions most strongly in common for the targeted group and all dimensions most unique across several of the targeted groups.

Claim 5 (previously presented): The television rating system according to claim 1, which further comprises an advertisement manager residing at the server-side system and connected to query said behavioral model database in the client-side system, said advertisement manager being programmed to parameterize behavioral profiles of said behavioral model database and to download the parameterized behavioral profiles to an advertising category membership agent residing at said client-side system.

Claim 6 (previously presented): The television rating system according to claim 5, wherein said advertisement manager includes a television user's history and is configured to reconstruct the downloaded parameterized behavior profiles in accordance with the television user's history to determine a most likely advertising category for the user, and to store the results as targeting category probabilities in a user category database.

Claim 7 (previously presented): The television rating system according to claim 5, which further comprises targeting agents and presentation agents disposed at said client-side system for creating an optimization of targeted category probabilities and relevant preference information in order to selectively capture, store, and display advertisements downloaded in accordance with the optimization.

Claim 8 (currently amended): In an interactive display system having a head-end side for distributing program content that has been pruned for a category, and a client side receiving the program content and selectively displaying the program content in

accordance with the selection of a user, a preference engine for determining a preferred program content for the user, comprising:

a user monitoring device receiving the pruned program content at the client side for recording contextual transition behaviors profiling the user to continually build a user profile of preferences and contextual transition behaviors associated with the user; and

a program distributing device at the head-end side for providing to the user the program content in accordance with the user profile, wherein a user is classified at the client-side into at least one category group based on advertising non-demographically classifiable category prototypes received from the head-end side, wherein the advertising non-demographically classifiable category prototypes are generated by removing television viewing data parameters most common between category behavioral profiles formed at the head-end side by using a category training set for clustering television behavioral viewing data from a plurality of users into non-demographically classifiable category groups over a predetermined training period.

Claim 9 (previously presented): The interactive display system and preference engine according to claim 8, wherein said user monitoring device models the user's behavioral interaction with advertising program content and with entertainment program content.

Claim 10 (previously presented): The interactive display system and preference engine according to claim 8 wherein the program distributing device is connected to receive from the head-end metadata information describing advertising content and

entertainment program content, and is programmed to adjust the user profile by combining the metadata information with the preferences and contextual transition behaviors of the user, and to build a relational knowledge base with associations among the behavior, demographics, and program content preferences of the user.

Claim 11 (previously presented): The interactive display system and preference engine according to claim 8 wherein the user maintaining device is programmed to model patterns of usage behaviors with a behavioral model and to extract key usage information from the behavioral model into a behavioral database having a confidence value that reflects an estimate of a structural and sampling quality of the data in the database.

Claim 12 (currently amended): In a program content delivery system having a head-end side and a client side, a system for targeting program delivery, comprising:

a central data system at the head-end side which receives viewing information from a plurality of users selected from the group consisting of watch data, watch start time data, watch duration data, and watch channel data, demographic information describing a program user, and electronic program guide information with metadata describing a program content;

a demographic cluster knowledge base acquirer receiving from the client side behavioral data of the user, the knowledge base acquirer outputting a knowledge base based on the viewing information in the form of a transition matrix with weight sets, the transition matrix used for predicting a particular category group of a plurality of

classifiable category groups [[of]]for classifying the user based on the behavioral data of the user; and

a program content generating module disposed at the head-end side and providing to the client side streams of program content based on the predicted category group of the user, wherein a user is classified into at least one category group based on advertising category prototypes transmitted from the head-end side, wherein the advertising category prototypes are generated at the head-end side by removing television viewing data parameters most common between category behavioral profiles formed at the head-end side by using a category training set for clustering the viewing information from the plurality of users into the plurality of classifiable category groups over a predetermined training period.

Claim 13 (previously presented): The program content delivery system according to claim 12, which further comprises a realtime feedback link for delivering to said central data system at the head-end side realtime information with click stream data concerning the viewing behavior of the user.

Claim 14 (previously presented): The program content delivery system according to claim 12, wherein said demographic cluster knowledge base acquirer is based on a hidden Markov model.

Claim 15 (previously presented): The program content delivery system according to claim 12, wherein said demographic cluster knowledge base acquirer and said program content generating module are software modules each adapted to be stored on a machine-readable medium in the form of a plurality of processor-executable instructions.

Claim 16 (previously presented): The program content delivery system according to claim 12, wherein said demographic cluster knowledge base acquirer generates demographic cluster information of the user in terms of statistical state machine transition models.

Claim 17 (previously presented): The program content delivery system according to claim 16, wherein the state machines transition models are defined in the transition matrix at the head-end side, and the transition matrix contains information of program transitions initiated by the viewer at the client side.

Claim 18 (previously presented): The program content delivery system according to claim 12, wherein the transition matrix is one of at least two concurrent transition matrices including a channel matrix and a genre matrix.

Claim 19 (previously presented): The program content delivery system according to claim 12, wherein the transition matrix is a two-dimensional matrix with transitions from television channels in normal form to television channels in temporal form.

Claim 20 (previously presented): The program content delivery system according to claim 14, wherein said demographic cluster knowledge base acquirer is configured to parameterize the user's behavior with a double random pseudo hidden Markov process, and to define a low-level statistical state machine modeling a behavioral cluster and a top-level statistical state machine with active behavioral clusters and an interaction among the active behavioral clusters.

Claim 21 (previously presented): The program content delivery system according to claim 12, wherein said demographic cluster knowledge base acquirer is configured to define a double random process with a plurality of dimensions, and to determine parallel statistical state machine transition events in at least two of three state categories including channel, genre, and title of the program content.

Claim 22 (previously presented): The television rating system according to claim 1, wherein the television behavioral viewing data from the plurality of users is used to create the category groups.

Claim 23 (previously presented): The television rating system according to claim 22, wherein the profiling information is used to determine a category group to associate a user with.

Claim 24 (previously presented): The television rating system according to claim 1, wherein the television behavioral viewing data includes contextual transition data.

Claim 25 (previously presented): The television rating system according to claim 24, wherein the contextual transition data is based on day of week and time of day.

Claim 26 (previously presented): The television rating system according to claim 24, wherein the contextual transition data is based on a previous type of television program.

Claim 27 (new): The television rating system according to claim 1, wherein the category training set is initially a preexisting collection of advertising categories.

Claim 28 (new): The television rating system according to claim 1, wherein the advertising category prototypes are formed during the training period.

Claim 29 (new): The television rating system according to claim 1, wherein the training period is continuously adjusted.